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THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

VOLUME XXV NOVEMBER 1917 NUMBER 9

A STATISTICAL STUDY OF THE SCHOLASTIC RECORDS OF 404 JUNIOR AND NON-JUNIOR HIGH-SCHOOL STUDENTS

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Assuming the contention to be sustained by the statistics and diagrams presented[1] that the junior high school in Grand Rapids has been so organized and administered as to bridge over quite effectively the "gap" between the seventh, eighth, and ninth grades, that it retains an increasing number of boys in the school, and that it is the policy to increase steadily the number of students in the junior high schools as added facilities are offered, the very pertinent question arises whether the intermediate schools are successful in preparing their students to perform the scholastic work of the senior high schools. This problem of a justification for the new type of organization becomes increasingly important in view of the findings of the Grand Rapids school survey about the cost of the junior high school from the point of view of instruction in these schools as compared with the cost under the traditional type of organization. In this survey Professor Rugg found that it cost about $11.00 to conduct a seventh grade in a traditional school and about $19.00 in the junior high school, or a difference of $8.00; and that it cost about $12.00 for the eighth grade under the old plan and nearly $20.00 under the new, or a difference of $8.00.[1]

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[1] Refers to chaps. i and ii of a Master's thesis. This article is adapted from chap. iii.

Restated in terms of the cost the problem is: In view of the fact that the instruction costs more under the junior high-school plan of organization than under the old scheme, can the justification of this added expense be found in the increased ability of the intermediate-school pupils to perform the work of the senior high school? That is, does the plan of departmental teaching have results which "carry over" in form of better scholastic work in the senior school? It is not suggested that this is the only way in which to measure the work of the junior high school, nor that the entire justification rests with the findings of such a survey, but merely that it offers a medium through which some valuable statistics may be secured and some precise measurements made.

In order to make this study of the intermediate schools in this city, the records of 404 students who were graduated from the Central and Union high schools in 1916 were compiled. One half of the students had had their preparatory training in the traditional elementary school, and one half under the junior high-school type of organization. The graduates of 1916 were chosen for several reasons. In the first place, those who had had the intermediate-school training would have had three years under the departmental teaching; in the second place, it was the first year that a class trained in the junior high school had had time to complete the senior high school; and, again, it represented the end of the first five years of the existence of the newer type of schools. The pupils who were chosen represented, as far as possible, no particular section of the city, but took in all parts of the school system; that is, the students chosen do not represent a selected lot, except in so far as any high-school graduates are selected. All of the records studied were of graduates of the two high schools. This fact, of course, eliminates certain types and makes the problem less complicated. One hundred and twenty of the students whose records were taken were graduates of the Union School. This high school is situated on the west side of the city, and its students come largely from the homes of the so-called "middle" and industrial class, while the Central High School, although all classes are represented in it as in any large high school, draws from what are commonly known as the better residential portions of the city.

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[1] *Grand Rapids School Survey* (1916), pp. 432–38.

After the records had been selected, the entire number was rearranged so that the two groups, except in the matter of preparation, would be comparable. All sections of the city are represented in both groups. Following the choosing of the 404 cards, the record of each was traced back to the sixth grade. This, it was felt, furnished a common starting-ground. In this grade, all would have received the same kind of instruction under the same plan of organization. The record of each was then carried forward through the twelfth grade. Each student's report represents, then, a study of seven years of his public-school training.

The subjects of English and mathematics were chosen because they are the two constants of the curriculum. Three years of English and two years of mathematics are required here for graduation from the senior high school, and in the junior high school all are required to take those subjects. This is also true, of course, in the sixth grade.

The last half of each year was taken as a basis of measurement because the assumption was made that in this last half-year the work begun in the first was completed; also, because no mid-year classes are graduated from the senior high school. In the system in use here, 6-2, 7-2, 8-2, etc., refer to the second half of the grade indicated.

In the accompanying tables the frequency distribution was charted for Grade 6-2 as the period when all the pupils finished the work which it is assumed they had under a common form of organization; 7-2 as the grade when they had finished their first year under a separate plan of organization; 9-2 as the time when the junior high-school groups were through with their intermediate-school training, and the non-junior students had finished their first year in the ninth grade and were ready for the senior work; and 12-2 as the time when each had had three years of senior high-school training.

In Grand Rapids, a mark between 70 and 75 is called a "condition" and below 70 "failed." This table indicates that there were more failures throughout in the non-junior high-school group than in the junior. In the seven grades, 39 of the junior group were below passing, 20 having conditions and 19 failing. For the same grades in the non-junior group, there were 56 who fell below 75 per cent, 29 having conditions and 27 failing outright. The distribution of this grade is important and interesting. The median of the junior high-school group is 86.96 per cent, and of the non-junior group 86.30 per cent. This in itself indicates that there is a remarkable similarity in the dispersion of the groups. It is at once evident that we have two groups which are comparable from the standpoint of distribution around the median.

TABLE I

THE DISTRIBUTION OF EACH GROUP IN ENGLISH IN GRADES 6-2 TO 12-2 INCLUSIVE

CLASS INTERVALS	GRADES						
	6-2	7-2	8-2	9-2	10-2	11-2	12-2
	Junior High-School Group						
95–100..........	42	33	38	23	19	15	12
90– 94.99......	6	17	54	40	25	23	19
85– 89.99......	65	72	54	62	53	53	45
80– 84.99......	54	54	44	52	71	78	41
75– 79.99......	1	3	5	23	13	18	7
70– 74.99......	4	....	1	1	5	9	....
65– 69.99......	1	2	....	....	9	2	1
60– 64.99......	2	1	....	....	1	....	....
	Non-Junior High-School Group						
95–100..........	29	30	43	19	19	19	10
90– 94.99......	6	10	9	32	22	13	14
85– 89.99......	80	77	91	67	44	47	47
80– 84.99......	58	66	51	59	83	84	41
75– 79.99......	5	3	1	16	18	19	6
70– 74.99......	5	....	4	6	5	8	1
65– 69.99......	2	7	....	2	5	8	....
60– 64.99......	3	....	....	....	....	....	....

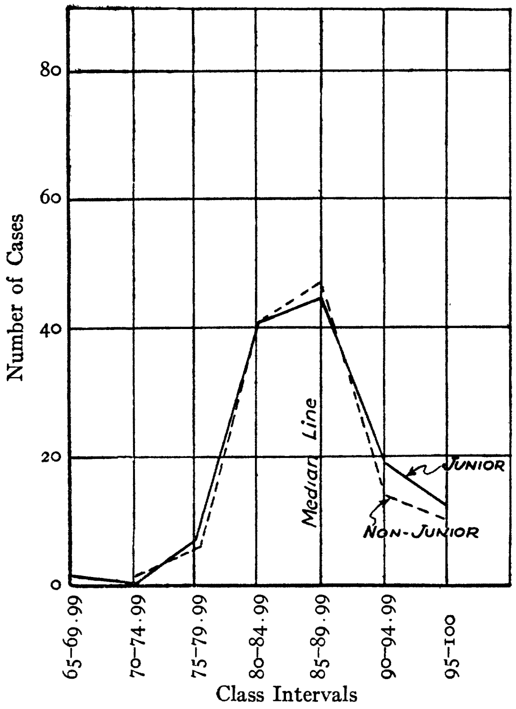
When the two groups have finished their 7-2 work, we find the distribution practically unchanged in its essential features. In the junior high-school group, there are 3 who fall below passing, all of them being failures. In the non-junior high-school group, there are 7 who fall below 75 per cent, all of them failures. The median for the intermediate group is 87.15 per cent and for the non-intermediate 86.29 per cent. Both of the medians fall in the class interval 85–89.99 per cent, as do the medians for the 6-2. The difference here is not, however, in any sense large, being 33 for one and 30 for the other. At the median there are only 5 more cases in the latter group than in the former.

It is very clear, then, that at the end of the first year no effect has been made on their distribution. The two groups which were so close together in the sixth grade are still almost homogeneous.

One would be justified, however, in looking for some decided change in the groups by the time each has finished the ninth grade. The distribution here becomes as important as in the sixth grade, because the two groups are about to enter upon their senior high-school work. In this grade there are 6 who got conditions and 2 who failed in the non-junior high-school group, and only 1 who got below passing in the junior high-school groups, and that was a condition. However, except for a redistribution around the median line, no essential difference in the two groups is apparent. The medians are very close, being 86.97 per cent for the junior high-school group and 86.29 per cent for the non-junior group. Both medians fall, as they did in the two preceding grades, in the class interval of 85–89.99 per cent. An interesting point is that the median for Grade 9-2 of each group is almost identical with that of the 6-2 median for each group. The 6-2 median for the junior high-school group is 86.96 per cent, and the 9-2, 86.97 per cent. The median for the non-junior high-school group in Grade 6-2 is 86.30 per cent, and in Grade 9-2, 86.29 per cent.

In the ninth-grade distribution, at the end of the junior high-school training for the one group and of the regular ninth-grade work for the other, and at the beginning of the senior high-school work for both, there is still no disparity in the frequency distribution of the two groups.

At the end of the senior high-school work it is very evident that there is still little difference in the two groups. There is one failure in the junior high-school section and one condition in the non-junior high-school. Fig. 1 indicates that, instead of drawing apart, the two groups display a tendency to parallel more closely in each grade. This is so true that, if the same colored line were used in drawing both curves, it would be very difficult to distinguish one from the other. The medians are 86.5 per cent for the junior high-school group and 86.21 per cent for the non-junior group. The average median for the entire seven years in English is 86.01 per cent for the intermediate group and 85.23 per cent for the non-intermediate group.



Junior High Median.......86.49 per cent
Non-Junior High Median..86.21 per cent

FIG. 1.—Distribution around the median for 12-2 English.

Another measure which will show the compactness of the groups is the quartile deviation of each.

Table II indicates very clearly that the longer the two groups stay in school the closer they get in ability in English. While the quartile deviations of the junior group display more fluctuation than the other, that is, although they are apparently farther apart in Grades 8-2, 9-2, and 10-2 than they were in Grade 7-2, still the deviation is small and shows a close homogeneity in the eleventh and twelfth grades. In a study of the quartile deviations of the non-junior group, it is apparent that there is even a closer homogeneity than is present in the junior group.

A study of the quartile deviations of the junior group indicates that they are quite close together in ability in the seventh grade, but that Grades 8-2, 9-2, and 10-2 present a greater variation. However, it is interesting to note that after Grade 8-2 a readjustment occurs and the group grows gradually closer together.

TABLE II

THE QUARTILE DEVIATIONS OF THE JUNIOR AND NON-JUNIOR HIGH-SCHOOL GROUPS IN ENGLISH FOR GRADES 6-2 TO 12-2 INCLUSIVE

Grade	Junior High-School Group	Non-Junior High-School Group
6-2	5.123	5.25
7-2	3.383	3.289
8-2	4.553	3.342
9-2	4.54	3.902
10-2	4.03	3.891
11-2	3.806	3.643
12-2	3.574	3.317
Average...	3.280	3.451

The non-junior group displays no such violent fluctuations, however, and indicates that there were no decided readjustments to be made in the seventh and eighth grades. From the ninth grade through the twelfth the quartile deviations decrease each year.

From this study of the distribution around English and of the quartile deviations for both sections, it is very evident that there is no change in the relative positions of the two groups as related to each other in Grade 6-2 in English. This is apparently only another way of saying that the two groups start out almost equal in ability to perform the work in English and that they retain that equality throughout the seven years. The difference in form of organization seems to have had little influence on their scholastic work in English.

Having studied the work in English, we are interested in finding out what happens in the case of mathematics. Table III gives the distribution by grades for this subject in each section.

A comparison of the number of failures in mathematics for each group shows that there are 21 conditions and 23 failures in the junior high-school group and 48 conditions and 22 failures in the non-junior group. Apparently the former group was able to perform the work somewhat more easily than the latter. The advantage, however, is small.

TABLE III

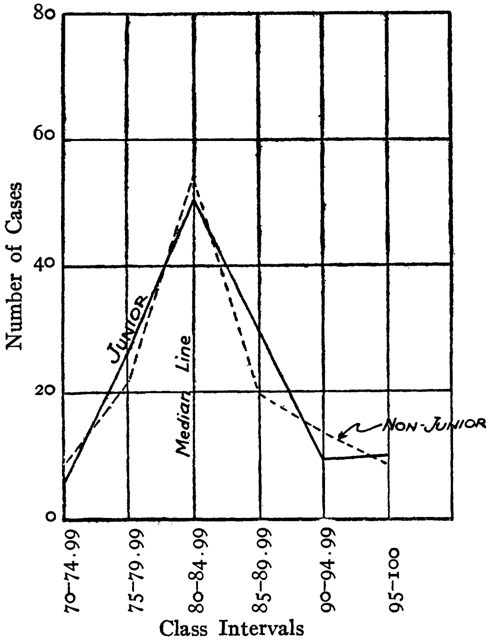
THE FREQUENCY DISTRIBUTION OF EACH GROUP IN MATHEMATICS FOR GRADES 6-2 TO 12-2 INCLUSIVE

CLASS INTERVALS	GRADES							
	6-2	7-2	8-2	9-2	10-2	11-2	12-2	Average
	Junior High-School Group							
95–100	32	36	54	37	6	10	5	4
90– 94.99	12	23	19	25	4	10	3	32
85– 89.99	62	51	60	28	13	31	5	74
80– 84.99	55	57	61	69	11	51	5	66
75– 79.99	3	3	7	16	12	27	1	20
70– 74.99	4	5	....	2	....	6	....	4
65– 69.99	2	1	....	7	1	....	....	1
60– 64.99	3	1	....	7	....	....	....	....
	Non-Junior High-School Groups							
95–100	29	27	34	37	11	9	3	3
90– 94.99	9	8	9	25	6	14	2	21
85– 89.99	57	75	92	39	18	20	11	68
80– 84.99	65	73	60	61	22	54	5	74
75– 79.99	4	3	4	18	9	22	1	30
70– 74.99	15	6	2	10	....	9	1	5
85– 69.99	2	3	....	6	....	....	....	....
60– 64.99	3	1	....	5	2	....	....	....

In Grade 6-2 in mathematics, there are 4 conditions and 5 failures in the junior high-school section as compared with 15 conditions and 5 failures in the non-junior section. The distribution around the median for the 6-2 mathematics indicates that the two sections are almost evenly distributed. The median for the intermediate group is 86.56 per cent and for the non-intermediate group 85.25 per cent. As was the case with the English, there are more cases in the two upper-class intervals for the junior high-school group than there are for the non-junior high-school section.

The median for the junior high-school group is 87.13 per cent, and for the non-junior group 85.79 per cent, a difference of only 1.4 per cent. There are 5 conditions and 2 failures in the one group, and 6 conditions and 4 failures in the other. However, no great difference between the two groups is evident.

The 9-2 distribution is interesting because it is the grade at which both groups end their work under a different scheme of administration, and because it shows what happens when each group for the first time undertakes algebra. Under the course of study in force, both sections begin algebra in the ninth grade. The junior high-school group has 14 conditions and 2 failures and the non-junior group 10 conditions and 11 failures. This indicates a slight superiority on the part of the former section. The median for the intermediate section is 84.95 per cent, and for the non-intermediate section 85.05 per cent.



Junior High Median......82.88 per cent
Non-Junior High Median..83.04 per cent

FIG. 2.—Distribution around the median for 11-2 mathematics.

In Grade 12-2 there were very few students taking mathematics, so few, indeed, that the curve was plotted for the eleventh grade. One of two things took place—either the junior high-school group finished their two years' required work in that subject and stopped, or they were able to finish it earlier in the course. In Grade 11-2 there are 8 conditions for the junior high-school and 9 for the non-junior high-school sections. The median in this grade for the former is 82.88 per cent, and for the latter 83.04 per cent. The curve in Fig. 2 indicates that the relative positions of the two curves have not changed much, and that there are still more cases around the median of the non-junior group than of the junior group. The average median for the entire seven grades in mathematics for both groups is 85.63 per cent for the junior group, and 84.34 per cent for the non-junior group.

Throughout the study of the distribution of each group in mathematics, as in the case of English, there is no marked tendency to alter the relative positions in which the two groups were distributed in the sixth grade. There is no indication of any large readjustment in the relations of the two groups.

A statement of the quartile deviations of each group in mathematics will show the same thing to hold true.

TABLE IV

THE QUARTILE DEVIATIONS OF THE JUNIOR AND NON-JUNIOR HIGH-SCHOOL GROUPS IN MATHEMATICS FOR GRADES 6-2 TO 12-2 INCLUSIVE

Grade	Junior High-School Group	Non-Junior High-School Group
6-2	3.74	3.808
7-2	4.915	3.306
8-2	5.239	2.679
9-2	5.782	5.719
10-2	7.429	4.323
11-2	3.86	3.824
12-2	5.838	2.91
Average...	3.568	3.525

This indicates that the longer the students of the junior high-school group are in the intermediate and senior high schools *the greater is the difference in their ability in mathematics.* This is an argument for the revision of the course. On the other hand, the students of the sixth, seventh, and eighth grades of the non-junior high-school group get closer together in ability to do the work. This may be due to the fact that they are under the same plan of organization and have no decided readjustments to make. The ninth grade, however, indicates that the first year in mathematics of a more advanced kind causes a more decided variation in their ability to do the work. The variation is larger for the non-junior high-school than for the junior high-school section, the quartile being 5.719 in Grade 9-2 and 2.679 in the eighth grade for the former, and 5.782 in the ninth grade and 5.239 in the eighth grade for the latter. This would seem to indicate that the intermediate-school pupils had made their readjustment to the new conditions, whereas the other students were in the process of readjustment. From this point on through the senior high-school mathematics, the non-junior group grows closer together in ability. The average deviation for the junior high-school section is 3.568, and for the non-junior section, 3.525, indicating the compactness of each group.

Another method of testing and comparing the success of the two groups in the senior high school is to compare the median achievements of each group in English and mathematics by grades. The medians of each group are shown in the Tables V and VI.

Fig. 3 shows very graphically the relationship between the two groups in English. The median achievement of each is very closely related to the other. Starting with Grade 6-2, in which the junior high-school group has a median of 86.95 per cent and the non-junior high-school group 86.30 per cent, the two curves parallel each other throughout the seven years. The first three years, or through the eighth grade, the curve steadily rises for both, but drops in the ninth grade. The end of the ninth grade finds the median achievement of each group to be almost identical. For the junior high-school group it is 86.96 per cent, and for the non-junior group 86.29 per cent, a difference of only 0.7 per cent. From the standpoint of median achievement, the students of the non-junior group were quite as well able to perform the ninth-grade work as those of the junior group. The upward slope in the last year is due, no doubt, to the fact that only the pupils proficient in English and those who have failed in previous years and are repeating their work elect English in the last year in the senior high school.

At the close of their senior high-school work the two groups are separated in their median ability by only 0.28 per cent, the junior median being 86.49 per cent and the non-junior median 86.21 per cent. While it is evident from Fig. 3 that the median ability of the intermediate-school group is slightly better than that of the non-intermediate group, the difference at the most is only 2.1 per cent in the eighth grade. This advantage is hardly large enough to constitute an argument for the superior work in English under the junior high-school plan of organization. The average median achievement of the junior high-school group is 85.63 per cent and of the non-junior group 84.34 per cent, a difference of only 1.3 per cent.

TABLE V

THE MEDIAN ACHIEVEMENT FOR EACH GROUP IN ENGLISH FOR GRADES 6-2 TO 12-2 INCLUSIVE

Grade	Junior High-School Group	Non-Junior High-School Group
	Percentage	Percentage
6-2..........	86.95	86.30
7-2..........	87.14	86.32
8-2..........	89.43	87.38
9-2..........	86.96	86.29
10-2..........	84.91	84.17
11-2..........	84.47	83.79
12-2..........	86.49	86.21
Average...	85.87	85.23

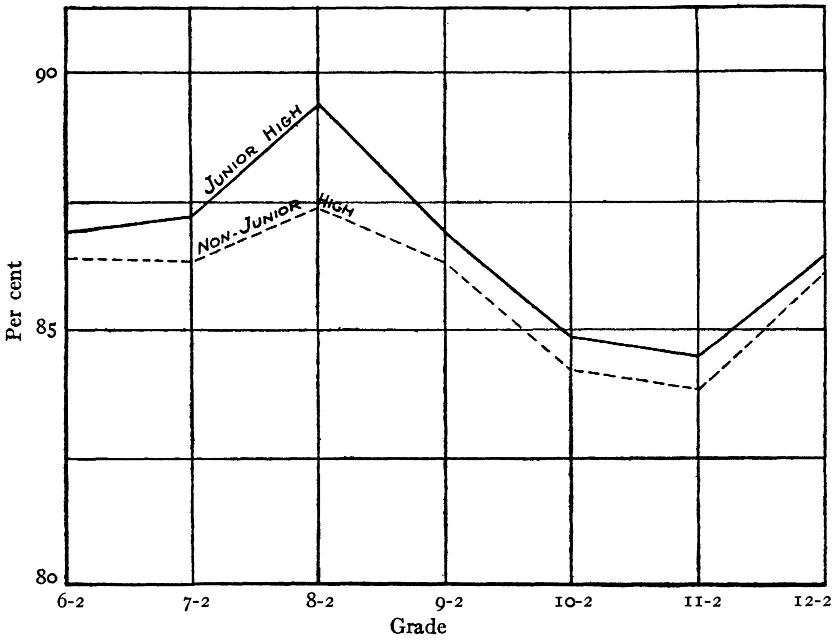


FIG. 3.—Median achievement of each group in English

Table VI and Fig. 4 showing the median achievement in mathematics are interesting and perplexing. In the sixth grade the two groups are almost in the same situation as they are in English. The junior high-school group has a slight advantage in mathematics of 1.3 per cent, while in English the advantage is only 0.6

TABLE VI

THE MEDIAN ACHIEVEMENT FOR EACH GROUP IN MATHEMATICS FOR GRADES 6-2 TO 12-2 INCLUSIVE

Grade	Junior High-School Group	Non-Junior High-School Group
	Percentage	Percentage
6-2	86.56	85.25
7-2	87.13	85.79
8-2	87.69	86.83
9-2	84.95	85.05
10-2	84.76	85.26
11-2	82.88	83.04
12-2	88.49	87.03
Average	85.63	84.34

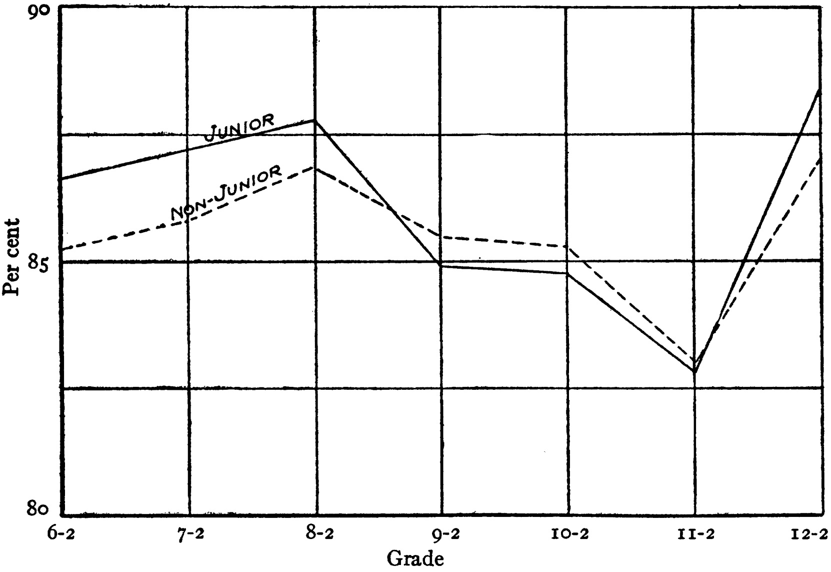


FIG. 4.—Median achievement of each group in mathematics

per cent. In the seventh grade this advantage in mathematics is 2.6 per cent, but in the eighth grade only 0.8 per cent. However, while the group in English maintains a slight advantage over the non-junior high-school group throughout the seven years, the same group in mathematics is unable to do so. Apparently they are unable, as a group, to do as well in algebra as the section from the traditional school. The difference is not large, only 0.1 per cent, but the falling off from the median achievement in the eighth grade is 2.7 per cent, which is more than the loss of the non-junior high-school group, 1.8 per cent.

Through algebra and in geometry the non-junior group makes a slightly better median score. This is shown graphically in Fig. 4.

While the average median of the junior group in mathematics is 85.63 per cent and that of the non-junior group 84.34 per cent, the advantage is so slight as to make the achievement of the two groups almost identical.

SPECIFIC CONCLUSIONS FROM A STATISTICAL STUDY OF 404 STUDENTS DIVIDED NEARLY EQUALLY BETWEEN JUNIOR AND NON-JUNIOR HIGH-SCHOOL GROUPS

1. The two groups selected for this study are comparable groups. This is shown by the frequency distribution of each in mathematics and English. Grade 6-2 was chosen as the starting-point of this study, because in this grade it is assumed that each group receives instruction under a common form of organization.

2. The similarity between the distribution of the two sections in both English and mathematics does not change materially throughout the seven grades. In other words, the relationship which existed between them in Grade 6-2 remains practically unchanged.

3. The compactness of each group in English is shown by the quartile deviation. Table II indicates that the junior high-school group is more compact than the non-junior section. This may be explained by the fact that the latter group has a period of readjustment to new conditions which the former does not experience.

4. The quartile deviation for each group in mathematics indicates that the longer the junior high-school section takes that

subject the farther apart the students get in ability. On the other hand, the non-junior section maintains a very close and even relationship in mathematics.

5. A study of the median achievement of the two groups in English reveals the fact that neither has any advantage over the other. The average median for the junior high-school group in English is 85.63 per cent and for the non-junior group 84.34 per cent, a difference of only 1.3 per cent. This difference is hardly enough to constitute an argument for the intermediate school from the point of view of instruction in English.

6. An examination of the median achievement of the two groups in mathematics reveals the fact that the abilities of the two groups in that subject are almost identical. What small advantage there is is in favor of the non-junior group. As is the case with the subject of English, the work of the junior group in mathematics apparently furnishes no basis for an argument in behalf of the new type of organization.

7. In view of the foregoing, one is forced to the conclusion that the increased cost of the intermediate school in Grand Rapids from the point of view of instruction does not find its justification in better scholastic work in the senior high school. It is apparent that the work is done as well, but that the students are no better prepared to do the advanced work.

THE RELATION OF THE ACHIEVEMENT OF THE 404 PUPILS AND THE CURRICULUM IN THE INTERMEDIATE SCHOOL IN GRAND RAPIDS

With the facts just given, shall the conclusion be that the intermediate school in Grand Rapids, although it succeeds in the matter of increased enrolment and retention in school of the pupils enrolled, fails to prepare its students any better for the work of the senior high school than does the traditional elementary school? That such is apparently the case in this city is clear, but that the blame lies at the door of the intermediate school is not so evident.

The question at once arises, Has the junior high school been thoroughly reorganized as to the curriculum and the administration of the course of study? Or, in another way, do the students in the intermediate schools have the same subject-matter presented to them as is given to the students in the elementary schools? If this is true, may not an explanation of the similarity in achievement and in distribution of the two groups be found in the answer to this question?

An examination of the curricula of the various junior high schools in Grand Rapids since they were organized in 1911 shows that there has been practically no change nor attempted change in the courses of study until the year 1915–16. In that year the course of study in English in the South High School was thoroughly revised, and this year a new course of study in history has been adopted for the same school. When the students whose records have just been studied were in the intermediate school, they followed the same course of study as those in the elementary school. Two important exceptions should be noted in the foregoing statement. In 1913 Latin and German were introduced as electives and were offered as additional subjects. This, so far as can be learned, is the extent to which the course has been revised up to 1915–16.

When it is considered that in the new type of organization the instruction in the seventh and eighth grades costs nearly $8.00 more per pupil, the expense, from that point of view, in Grand Rapids cannot be justified.

To put it in another way: it is not economical to spend an aggregate of $16.00 more per pupil for instruction to produce results which are obtainable for that much less.

Grand Rapids has been progressive in the organization and administration of the junior high school from the point of view of enrolment, and the results are very satisfactory. From the point of view of the reorganization of the curriculum, practically nothing has been done, and the results do not show progress.

SOME OF THE "INTANGIBLE VALUES" DERIVED FROM THE JUNIOR HIGH SCHOOL

Although the conclusions reached as to the scholastic ability of the junior high-school group in performing the senior high-school work do not seem to warrant the additional expense of the intermediate schools, it does not follow that Grand Rapids is dissatisfied with the experiment. It is only fair to state that there are certain benefits arising from the junior high school which, in the estimation of the administration, more than warrant the increased expenditure.

Throughout this discussion, little mention has been made of the so-called "intangible values" arising from the junior high-school form of organization. The attempt has been made to confine the scope of the thesis to the "measurable qualities" of the intermediate school. In view, however, of the increased cost of the new form of organization, it may not be out of place to mention a few of the benefits which, while they are not subject to precise measurement, do, in the minds of many, justify the increased expenditure.

In Grand Rapids it is felt that the higher cost of instruction of the seventh- and eighth-graders is, aside from other considerations, justified upon the following grounds:

The period between the ages of thirteen and sixteen is the time when practically all the children enter upon adolescence. This tremendously important stage in the lives of the students is essentially a period of change. The boy becomes a youth, and the girl a maiden. They both experience an awakening of the emotions, they become self-assertive, they feel strong social attractions, they begin to think, vaguely perhaps, but none the less surely, in terms of their future vocations, and begin to realize something of their relation to the industrial world. Almost for the first time the students begin to ask the question, "Why?" about their school work. It is a period when they must be dealt with as individuals. The traditional scheme of a one-room-one-teacher form of organization with a common curriculum for all, which seemed to meet their needs during the first six years, no longer proves satisfactory. In short, the period of adolescence is the time of budding individuality.

The intermediate plan of organization gives the student an opportunity to develop and to express his individuality. Under the departmental plan of teaching he comes in contact with a greater number of teachers, with the result that he has at once a larger point of view than is possible under the traditional scheme.

He has also more men teachers, a most desirable thing for the growing boy and girl. His teachers are specialists in their line, and, as a rule, bring to the subject a breadth of view and give to the student an outlook upon that particular field not possible in any other way.

Again, the junior high school is so organized as to provide for promotion by subject rather than by grade. It is felt here that the benefits of this one change can hardly be overestimated. Nothing is more deadening than to repeat two or three subjects because a student has failed in one. It results either in "marking time" by the student or frequently in making him disgusted with the whole process of education. This leads the older pupils to drop out of school and causes the others to become rebellious and surly. Incidentally, it is a great waste of time. Promotion by subject rather than by grade has eliminated practically all of this feeling in Grand Rapids, and has, it is felt, retained many students who otherwise would have left. No statistics are available to prove this particular point, but it is subscribed to by all who have been engaged in the junior high-school work here.

Another of the "intangible values" which has operated to make the junior high school popular in Grand Rapids is that it tends to unify the school system. Children of the same age are, in general, grouped together. Pupils in the elementary schools and pupils in the six-year high school have certain interests in common. It was a frequent complaint that the older children of the elementary school had no common interests with the younger students and that they were not yet affiliated with the high school. As a consequence, little was or could be done to promote and guide the development of their social activities. From the experience in this city, where almost every form of organization is found, it is quite the consensus of opinion that for this particular purpose the three-year junior high school is the best. Under this plan both the younger children, with whom the junior high-school student has no common interest, and the older student, from whom, too often, he copies many bad traits, are eliminated.

It is also the verdict of those in the work here that one of the benefits derived from the newer type of school is the opportunity it gives for each one to develop, as far as possible, along the line of his aptitudes, and, as a corollary of this, perhaps to discover some aptitudes which he did not know he possessed.

Indeed, this opportunity which the junior high-school type of organization offers for the adolescent boys and girls to "find" themselves constitutes, in the minds of many in Grand Rapids, its strongest argument. By means of what is known as the "rotating" plan, each boy must give a semester to the forge, to machine-shop, to wood-working, and to the electrical shop, or printing, and each girl a semester to millinery, dressmaking, and cooking previous to the ninth grade. Each student must then elect for one year one of the activities in which he or she has been prepared and in which special aptitude has been shown.

A GENERAL SUMMARY OF THIS STUDY OF THE JUNIOR HIGH SCHOOL IN GRAND RAPIDS

This study shows very clearly that Grand Rapids is one of the pioneers in the organization of intermediate or junior high schools. The fact that they were established here so early (1911) was due largely to the fortunate co-ordination of several factors. These seem to be: a superintendent who took advantage of the opportunity presented by the maturing of a building program at that particular time, a progressive board of education, and school patrons who were willing that such an experiment should be tried.

It is also evident from this study that the major portion of the reorganization has concerned itself with what was considered in 1911 to be the sole purpose of the junior high-school type of organization, the bridging over of the "gap" between the eighth and ninth grades, or the retention in school of the students for a longer period. The administration has also been active in opening new intermediate schools and in a gradual adoption for the whole city of the six-six or six-three plans. When it is considered that at present 57 per cent of all the seventh-, eighth-, and ninth-graders in the public schools are in the junior high schools, and that in 1915 86.3 per cent of the preceding eighth-grade class were in the ninth grade, and that there were 225 boys in the eighth-grade class in 1913 and 192 boys (85 per cent) in the succeeding ninth grade in 1914, it must be conceded that from this standpoint the results of the reorganization have been satisfactory.

The other fact which is no less evident is that the senior high-school graduates of 1916 who were prepared in the junior high school were no better trained than those who came from the elementary buildings.

It is evident, as the *Survey* points out,[1] that the reorganization of the secondary schools here has not been "carried far enough," and that "the most glaring faults of omission have to do with the curriculum and its administration." An examination of the curriculum reveals the fact that there has been practically no reorganization of the course of study, with the exception of the introduction of Latin and German and the added facilities for shopwork, since the establishment of the schools, until the year 1916.

In view of these facts it is logical to conclude that in Grand Rapids the junior high school will fully justify its increased cost, to put it in terms of money, only when it has been fully reorganized, not only as to its administration, but especially as to its curriculum.

The results of the statistical study of the scholastic records of the students prepared in the junior high school are disappointing, but they are by no means intended to indicate that the intermediate school in Grand Rapids is a failure, or that there have not been benefits derived from it which more than justify the increased cost. Among the values which might be mentioned are: the departmental plan of teaching, which broadens the horizon of the pupils; promotion by subject rather than by grade, and the consequent elimination of useless "repeating" and "marking time"; unification of the school system by grouping together students with the same common interests and points of view; and the providing of opportunity for students to "find" themselves.

It is true that the junior high schools in Grand Rapids have not been sufficiently organized as to their curricula, and that to function efficiently the course of study must be completely changed, but it is also true that the intermediate schools, although handicapped by an antiquated outline of work, have been able to render a real service to the community.

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[1] *Grand Rapids School Survey*, p. 215.